Mobile Digital Video Recorder

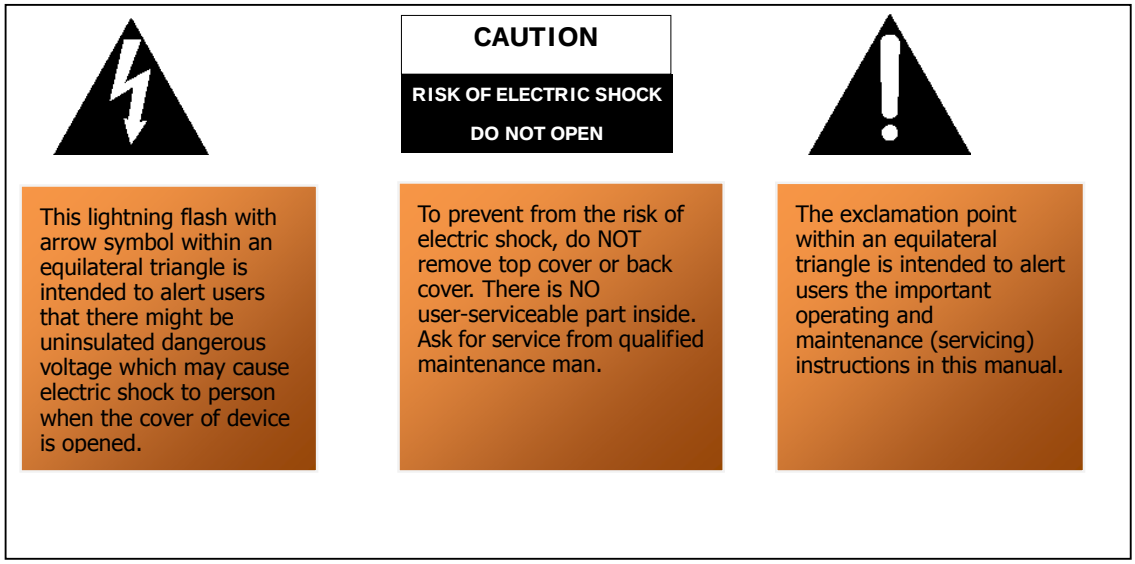
DVRM-5004

User's Manual

Thank you for using our Mobile DVR. This manual is applicable for DVRM-5004. Please read this User's Manual carefully to ensure that you can use the device correctly and safely. The contents of this manual are subject to be changed without notice.

Warning

This device is NOT of waterproof; to prevent it from any accident of fire or electric shock, please do NOT put any container with water on the device or nearby. Do not expose the device to moisture, or extreme temperatures.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
This lightning flash with arrow symbol within an equilateral triangle is intended to alert users that there might be uninsulated dangerous voltage which may cause electric shock to person when the cover of device is opened.
To prevent from the risk of electric shock, do NOT remove top cover or back cover. There is NO user-serviceable part inside. Ask for service from qualified maintenance man.
The exclamation point within an equilateral triangle is intended to alert users the important operating and maintenance (servicing) instructions in this manual.

Important notice:

1. Please read over all cautions.
2. Please keep this manual for reference in the future.
3. Please notice all warning information.
4. Please strictly follow the instructions in this manual while operating.
5. Please NEVER put this device under the place which is easily poured by water.
6. Please do NOT use abrasive chemicals, cleaning solvents or strong detergents to clean the device. Wipe the device with a soft and dry cloth.
7. Please do NOT get the gate of airiness heat exchange closed.
8. Please leave the device far away from hot and high temperature environment.
9. Install the device with the accessories coming with it.
10. Please take care when moving the device, make sure of security, and avoid being damaged by dropping from high place.
11. Call for qualified maintenance man to repair when needed.
12. The device can only be installed horizontally. Installed vertically or out of the horizontal could hurt person or damage the device or/and its parts.

1.Main Features..... 4
2. Overall description..... 5
2.1 Front Panel 5
2.2 Rear panel 7
2.3 Remote..... 8
3. Using the recorder 9
Step 1, Install the Hard Drive into the Hard Drive case..... ...9
Step 2, Connect camera..... 9
Step 3, Connect to power supply 11
Step 4, format the SD card.....12
Step 5, Choose recording quality 12
Step 6, start recording 13
4.Operations.....16
4.1 Play back the files on SD card.....16
4.2 Manage the power 20
5.Appendix, cables 255
5.1 Power supply.....255
5.2 AV cables 255
5.3 Signal cables 277
6. Specification.....288
7. List of Standard Accessories.....29

1. Main Features

Video and Audio

- H.264 High Profile video compression, real time recording 25 fps (PAL) / 30 fps (NTSC) for each channel. Frame rate adjustable for each channel.
- AAC (Advanced Audio Compression) for audio.
- D1 resolution for each channel, which means each channel supports 704x576 (PAL) - 704x480 (NTSC).
- Support 4 channel video and 4 channel audio recording；

Power Input

- Support from +8V DC to +32VDC. Applicable for vehicles with +12V or +24V battery.
- When the power input connects in reverse polarity, the auto-protect function can prevent the recorder and battery from damage.
- The recorder provides each camera with stable +12V DC power; DVR can detect the short cut on power circuit.
- Can use ignition to control the power.

Recording mode

- Continuous record.
- Start recording automatically when the DVR is turned on.
- Support schedule recording.
- Support alarm recording.

Speed and Vehicle status recording

- Record vehicle speed and car id with audio and video.
- Support 6 sensors, can be connected to brake, return, right turn, left turn light etc.
- Over-speed alarm.

SATA 2.5" Hard Drive and SD card for storage

Support S-ATA 2.5" Hard Drive and SD card for storage, external USB device (memory stick or Hard Drive) is ok.

NOTE

If you remove the SD card while recording or playing, it might cause the damage of the file on SD card. While recording or playing, the yellow light on the front panel will be on. So please stop recording or playing until the yellow light is off if you need to remove the SD card.

Multiple players supported

You can use the following player to play back the record file.

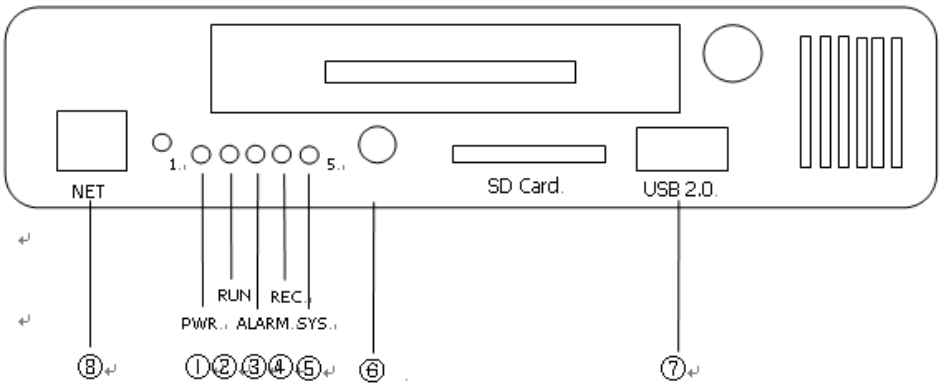
- VLC media player（version1.0.0 or above）

- Storm player (Version 2009 or above）
- Winamp (Version 5.531 or above）
- Windows Media Player (Need to download the H.264 control by network)

2. Overall description

- High video quality based on H.264 profile compression.
- High resolution recording, up to mega-pixel for 4 channel (1280 x 1024) and D1 resolution for 1 channel (PAL: 704 x 576 / NTSC: 720 x 480).
- USB ports connect thumb drive / external HDD storage.
- Compact size & lightweight, much easier for installation.
- Support from 8VDC to 32VDC, applicable for 12VDC and 24VDC vehicles.
- The recorder provides each camera with stable +12VDC power; DVR can detect the short cut on power circuit.
- Can use ignition to control the power. Configurable power timer after ignition is off.
- Automatic, event trigger, schedule or motion recording options.
- Can record speed with audio and video. Support over speed alarm.
- Support 3 sensors, can record brake, return, right turn, left turn light status into the record file.
- External GPS allows for vehicle tracking and location with video and audio.
- Use AVI format for record file. Compatible with different player software.
- Support FAT32 file system, record file can be read directly on Windows, Linux.
- Motion detection and the sensitivity can be adjusted.
- Date and time stamp records onto footage.

2.1 Front Panel



①：Power light.
②：Run light.
③：Alarm light.
④：Recording media (SD or Hard Disk) Operation light.
⑤：System light.
⑥：Control panel or remote extension cord。
⑦：USB 2.0 port.
⑧：Network port. (RJ45)

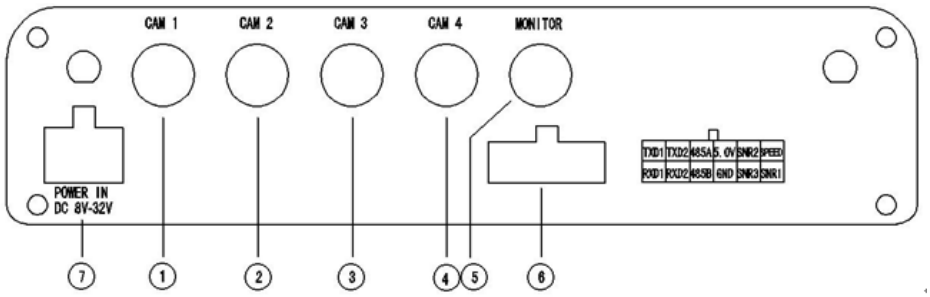
Get to know the status of Mobile DVR by the indication of PWR light and RUN light:

PWR	RUN	Description
Always On	Blinking	DVR is turned on and running.
Blinking with RUN by turns	Blinking with PWR by turns	Ignition is not enabled and DVR is turned off.
Blinking together with RUN	Blinking together with PWR	Ignition is not enabled and DVR is running. The DVR will be turned off when it reached **the "Ignition Power Off Delay"** time.
Blinking	Off	The DVR is turned off. It will restart if POWER button is pressed on the remote.

Alarm light (yellow)	Description
On	Alarm indication, such as over speed.
Off	No alarm.

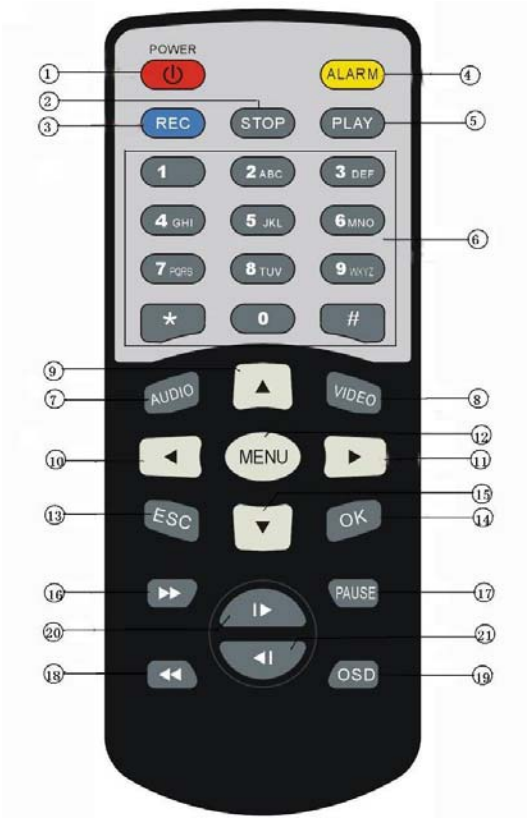
System light (yellow)	Description
On	In recording. Don't remove the SD card in this status. Please press **"Stop"** on the remote to stop recording if you need remove the SD card. Removing SD card in this status might cause the damage on the record file.
Off	Recorder is not in recording mode. You can remove the SD card.

2.2 Rear panel



①：AV input 1 (including audio input 1, video input 1 and power for camera 1)
②：AV input 2 (including audio input 1, video input 1 and power for camera 2)
③：AV input 3 (including audio input 1, video input 1 and power for camera 3)
④：AV input 4 (including audio input 1, video input 1 and power for camera 4)
⑤：AV output (including audio output, video output and power)
⑥：1 speed sensor, 3 sensors, 2 RS232 port, 1 RS485 port and one 5V DC output.
⑦：Power for the recorder and ACC input.

2.3 Remote



1. Power
2. Stop
3. Record
4. Alarm
5. Play
6. Numbers
7. Audio
8. Video
9. Up
10. Left
11. Right
12. Menu
13. ESC
14. OK
15. Down
16. Fast Forward
17. Pause/Step
18. Fast Backward
19. OSD
20. Next
21. Previous

How to use the remote：

（1）Press **<MENU>** to enter main menu or sub menu. You can also use **<MENU>** to select among different value in the submenu. You can also use **<MENU>** as **<OK>.**

（2）Press **<Up/Down/Left/Right>** button to move between the different menu item.

（3）Press **<OK>** to save and exit the current menu. Press **<ESC>** to cancel and exit the current menu. If you modify something in the menu, recorder will prompt a window to ask you to save or cancel your modification.

（4）Press **<VIDEO>** to toggle among different video channel.

（5）Press **<AUDIO>** to toggle among different audio channel.

（6）To delete character in the edit control, you can press **<Left>.**

（7）Press **<POWER>** for a while to turn on/off the recorder.

3. Using the recorder

Step 1: Install the Hard Drive into the Hard Drive case

To install Hard Drive with S-ATA interface, please do as following steps.

1. Remove screws on the back side of the Hard Drive case.

2. Take the S-ATA connector out of the Hard Drive case.

3. Connect the connector with the Hard Drive.

4. Put the Hard Drive back to the Hard Drive case. Please note, the Hard Drive should be

put to the mounting bracket inside of the Hard Drive case.

5. Install the Hard Drive with mounting bracket though the holes on the Hard Drive case. Please note, install the Hard Drive tightly. If not, the Hard Drive will be damaged due to the vibration which might lead to the data loss.

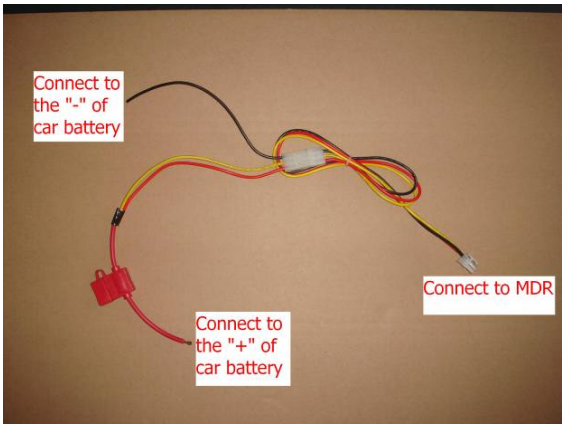
6. Install the connector back to the back side of Hard Drive case. Then the S-ATA Hard Drive is installed into the Hard Drive case.

Step 2: Connect the camera.

or

Connect the camera as the picture shows. The yellow connector is for video and the white connector is for audio.

Step 3: Connect to power supply



Connect the red wire to the **"+"** pole of the battery and black wire to the **"-"** pole of the battery. The yellow wire is for connecting the ignition signal. If you don't need to use ignition, connect the yellow wire to the **"+"** pole of the battery.

Please note: The fuse is used for protecting the battery from shortcut so you need to connect the fuse near to the battery.

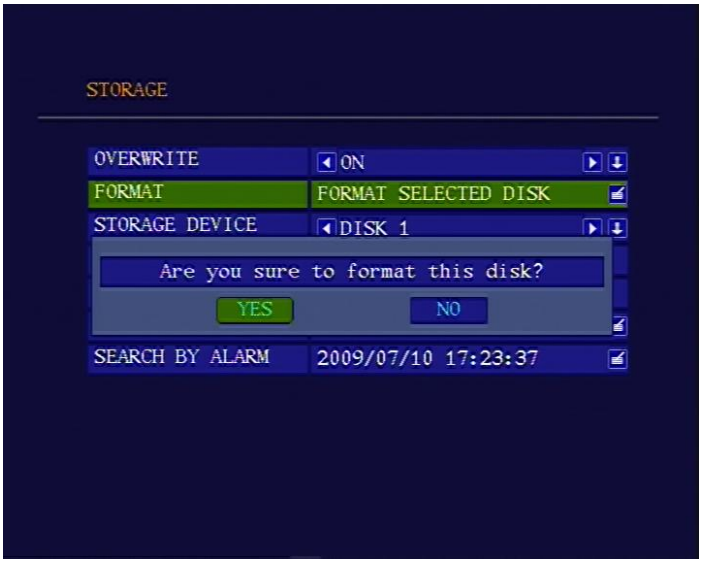
NOTE

1. The DVR uses DC power input, please be very careful when connecting to the **"+"** and **"-"** of the power supply.
2. Wide voltage range of 8V-32V for the DVR. The DVR may be damaged if the voltage comes too high. And the DVR may not work if the voltage comes too low.
3. Power of the DVR should be supplied by the car battery.

4. Power consumption of the DVR can be 60W when the engine starts. All the cables for connecting from power to the DVR should be thick enough for current over 5 Amperes.
5. To protect the battery from being damaged of short circuit on the cable, the fuse should be placed very closed to the car battery.

Step 4: Format the Hard Disk

You need to format the Hard Disk before using it. Press **<MENU>** to enter the main menu and select **<FORMAT>** in **<STORAGE>** sub menu.



Choose **"YES"** to format the Hard Disk. The format process will take some time and you will see the capacity of the Hard Disk after formatting.

Step 5: Choose recording quality

Press **<MENU>** to enter the main menu and select **"RECORD SETTINGS"** in the **"RECORD"** sub menu.

CH SIZE QUALITY REC MODE NET AUDIO
01 D1 HIGH AUTO OFF ON
02 D1 GOOD AUTO OFF ON
03 D1 NORMAL AUTO OFF ON
04 2/3D1 BASIC AUTO OFF ON
CH 01:About 720M/Hour
CH 02:About 540M/Hour
CH 03:About 346M/Hour
CH 04:About 198M/Hour
Total Disk:About 8.9Hours

The detailed parameters for each quality list as below:

Quality	Resolution	Maximum Bitrate（Bit/s）	Minimum Bitrate（Bit/s）	Audio Bitrate（Bit/s）	Capacity need
BASIC	2/3 D1	350K	210K	16K	198M/hour
NORMAL	D1	1000K	600K	16K	324M/hour
GOOD	D1	1200K	720K	16K	432M/hour
HIGH	D1	1500K	900K	16K	540M/hour

NOTE

Maximum write speed for most SD card is about 6000KBit/s, so please select "GOOD" or below if you are recording 4 channel video at same time.

Step 6: Start recording

Press **< REC>** on the remote to start recording. There will be one red dot on each channel indicating the recording. The recorder will record all the channels by default. If you need to record only one channel, use **<UP/DOWN/LEFT/RIGHT>** or number key **"1", "2", "3", "4"** to select one channel and press **< REC>** to recording.

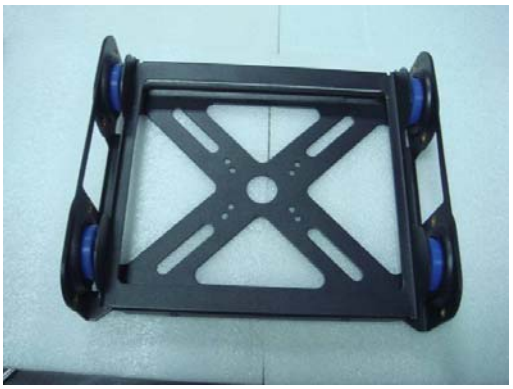
NOTE

The DVR will recognize either Disk 1 or Disk 2 in random order if both Hard Drive and SD Card are inserted. The Disk 1 can be Hard Drive or SD Card, same as Disk 2.

Step 7: Install the mounting bracket

1. Release the screws at the front of DVR and take the DVR out of the mounting bracket.

2. Use screws to install the mounting bracket.



3. Install the DVR back to the mounting bracket.
   Please note: there is a lock connector at the bottom side of DVR. Please make sure this connector is in position when you put the DVR back to the mounting bracket.

4. Use the screws to install the DVR to the mounting bracket.

4. Operations

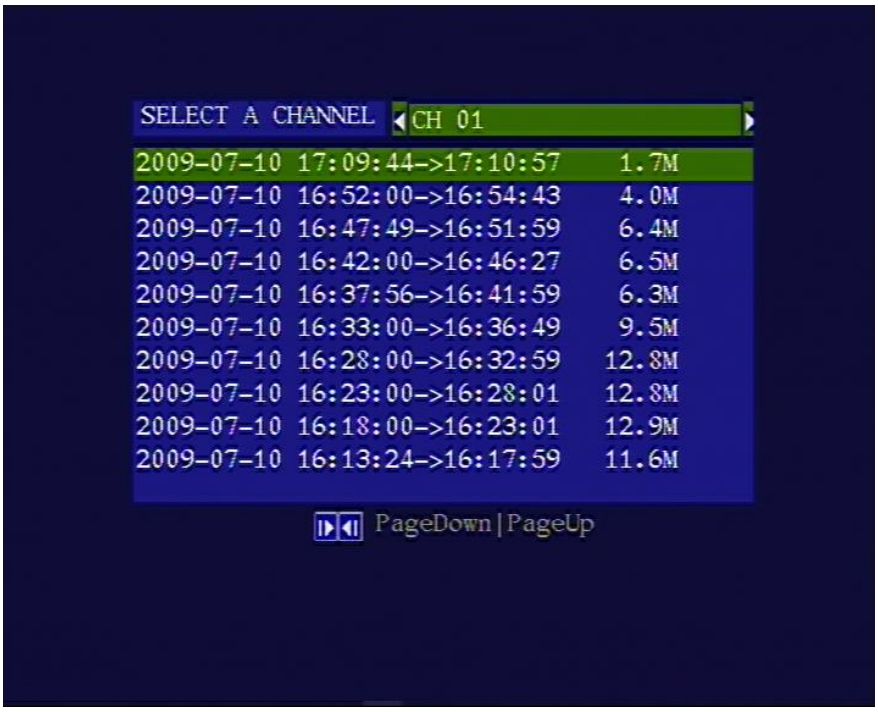
4.1 Play back the files on HDD drive

（1）Play back the recent record file. Press the **<PLAY>** button on the remote, the recorder will play back the file for first channel. You can also use **<UP/DOWN/LEFT/RIGHT>** or number key **"1", "2", "3", "4"** to select the channel and press **<PLAY>** to play the channel you want to play. You can also press **<VIDEO>** to toggle the full screen of one channel. Press **<Next> / <Previous>** to select the next or previous file. The play status is indicated by a green triangle on the top right corner of the screen.

（2）Seek and play back the file at a specific time. Press **<MENU>** to enter the main menu and select **"SEARCH BY TIME"** in the **"STORAGE"** sub menu. Select the time you want to seek and choose **<OK>.** The recorder will list the record file around the time you set. Then press **<PLAY>** to play the file.

STORAGE
OVERWRITE
ON
FORMAT
FORMAT SELECTED DISK
STORAGE DEVICE
DISK 1
TOTAL CAPACITY
16.1G
FREE CAPACITY
9.2G
SEARCH BY TIME
2009/07/10 17:23:37
SEARCH BY ALARM
2009/07/10 17:23:37

STORAGE
OVERWRITE
ON
FORMAT
FORMAT SELECTED DISK
DATE
2009
07
10
TIME
17
23
37
OK
CANCEL



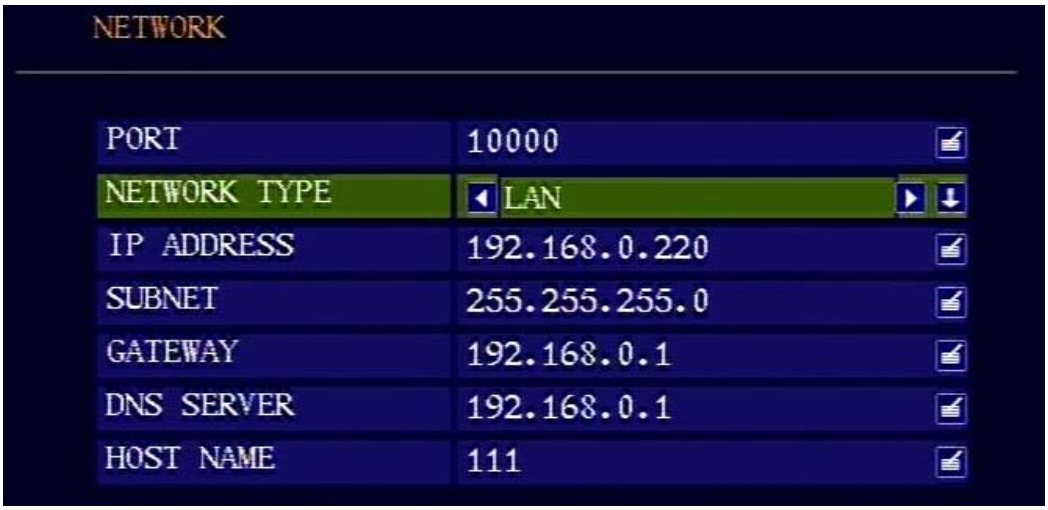
Real-time view via Network port (RJ45):

1. Connect the DVR to laptop via RJ45.
2. Enter the menu of DVR by pressing **"MENU"** on remote controller, choose **"RECORD"** and press **"MENU"** or **"OK"** to go to its sub-directory, choose **"RECORD SETTINGS / QUALITY AUDIO"** to set the **"NET"** as **"ON"** (it is defaulted as **"OFF"**):

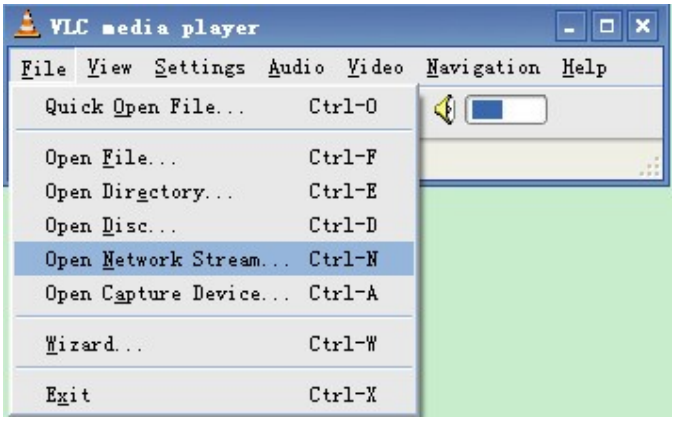
CH SIZE QUALITY FRAMERATE REC MODE NET AUDIO
01 D1 HIGH 25 AUTO OFF ON
02 D1 HIGH 25 AUTO OFF ON
03 D1 HIGH 25 AUTO OFF ON
04 D1 HIGH 25 AUTO OFF ON
CH 01:About 540M/Hour
CH 02:About 540M/Hour
CH 03:About 540M/Hour
CH 04:About 540M/Hour
Total Disk:About 7.1Hours

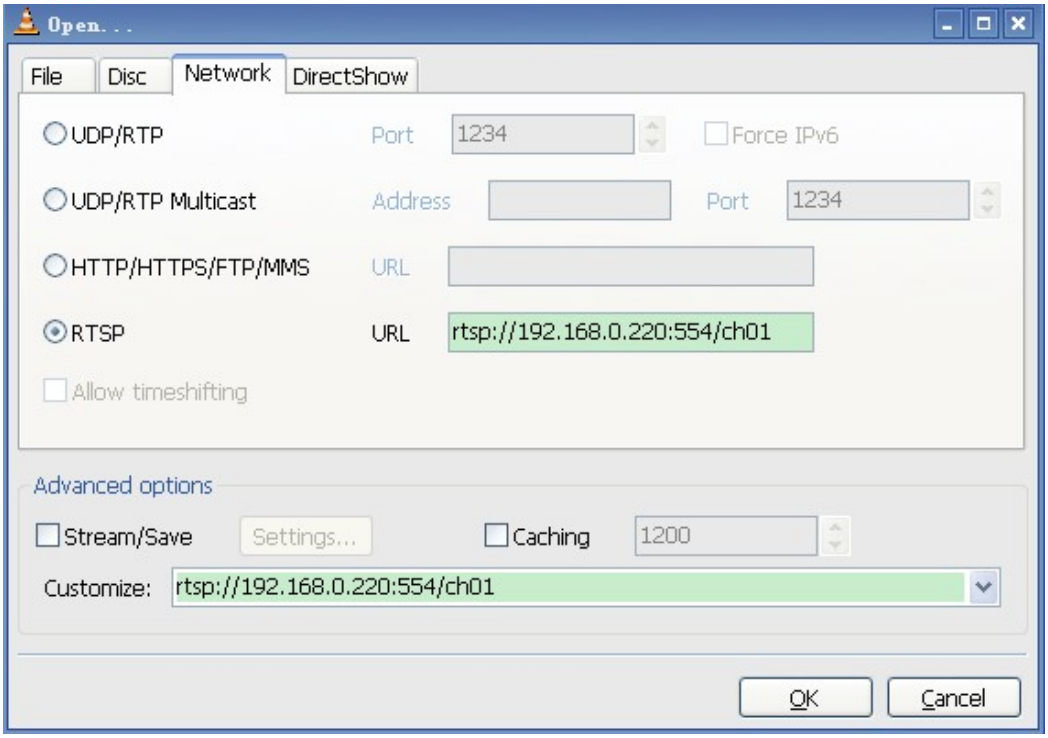
Note: You may set other parameters in this window, like image quality, frame rate, etc.

3. Go back to the **MENU**, and choose **"NETWORK"** to get the DVR's IP address:



4. Download the newest VLC Media Player (Version 1.0.0 or above) which is a free software using open source application.
5. Run VLC, press **"File"**, choose **"Open Network Stream"**:





6. Choose **"RTSP"** and input the IP address you got from the DVR: rtsp://192.168.0.220:554/ch01, then press **"OK"** to view.

Note:

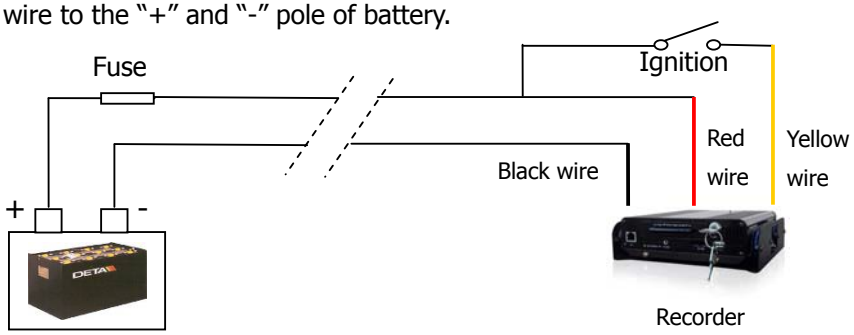
a. The PC's IP address should be among same network segment of DVR's, it means the PC's IP address should be set as 192.168.0.100.

b. 192.168.0.220 is the DVR's defaulted IP address, ch01 stands for 1st camera channel, ch02 stands for 2nd camera channel, ch03 stands for 3rd camera channel, ch04 stands for 4th camera channel.

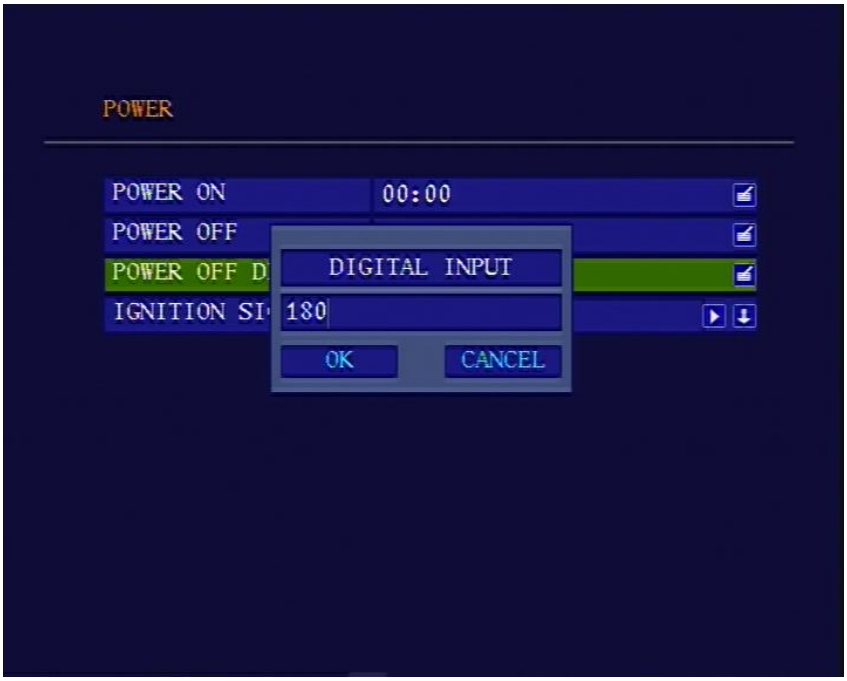
4.2 Manage the power

（1）Use the ignition to control the power

1. Connect the ignition to the yellow wire of the power cable. And connect the red and black wire to the "+" and "-" pole of battery.



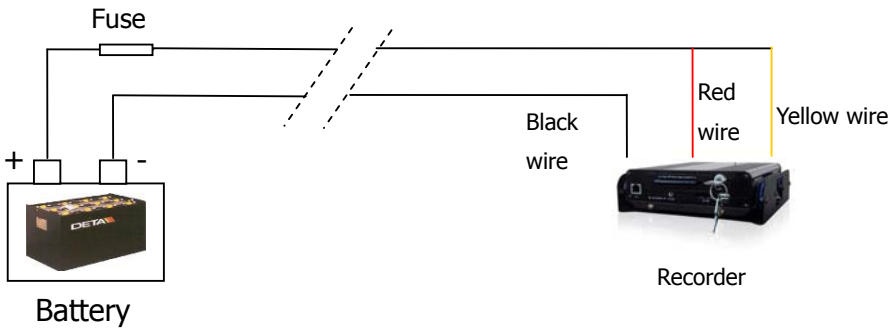
2. Set the power off delay. Select **"POWER OFF DELAY"** in the **"POWER"** sub menu. The maximum duration for the power off delay is 86400 seconds (24 hours). If the power off delay is set to 0, the recorder will turn off immediately if the ignition is off.

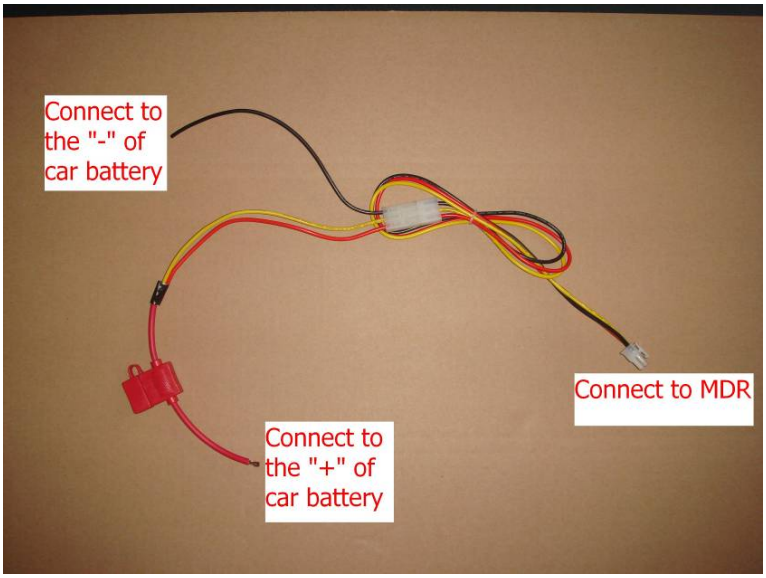


If the vehicle is using low level as ignition, you need to set the ignition signal to low level.

（2）Turn on/off the recorder automatically

1. Connect the DVR to the battery. Please note that you need to connect the yellow wire (ignition wire) to the **"+"** pole (+12V or +24V) of the battery.





2. Select **“POWER ON”** and **“POWER OFF”** in the **“Power”** sub menu and set the time you want to turn ON/OFF the recorder.
If you don’t need to turn on/off the recorder automatically, set the **“POWER ON”** and **“POWER OFF”** time to **“00 : 00”.**

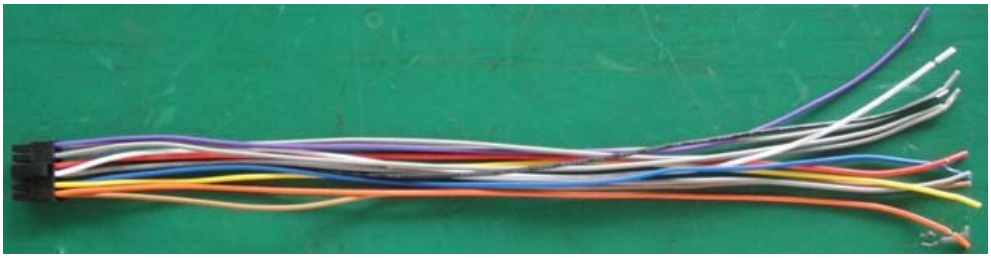
4.3 Alarm recording

Using the sensor (alarm)

The Mobile DVR can be connected to 4 alarms and 6 sensors. All these alarms and sensors can trigger the alarm recording. They can also turn on the buzzer, trigger the alarm out,

trigger to toggle video display, and trigger to show information on the screen.

Here are the pictures for alarm connector and sensor connector.



Mark	Color	Description
SENSOR1	Gray	Sensor (Alarm) 1
SENSOR2	Gray	Sensor (Alarm) 2
SENSOR3	Gray	Sensor (Alarm) 3
SPEED	Purple	Speed sensor pulse signal input

4.4 Get speed from GPS

1. Connect the GPS receiver with DVR. The GPS should connect to the **"Red, Black, Brown"** connector of DVR.

2. Choose menu item **"Vehicle Setup"**, then choose the **"Speed"** to be **"From GPS"**.
3. The speed will be displayed on the right bottom of the screen. If you need the speed to be **"MPH"** other than **"KM/H"**, please select **"mile"** in the **"Pulse No."**.

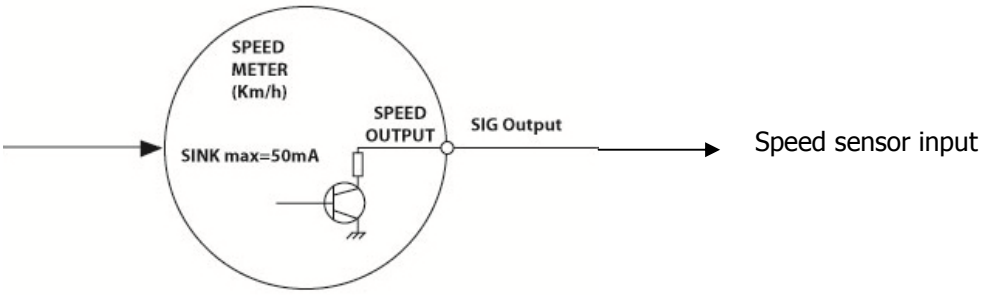
Get Speed from Speedometer

1. Connect the speed sensor input wire on the DVR to the speed sensor. The speed sensor input wire of the DVR is the Purple wire on the jet marked with **"SENSOR"**.

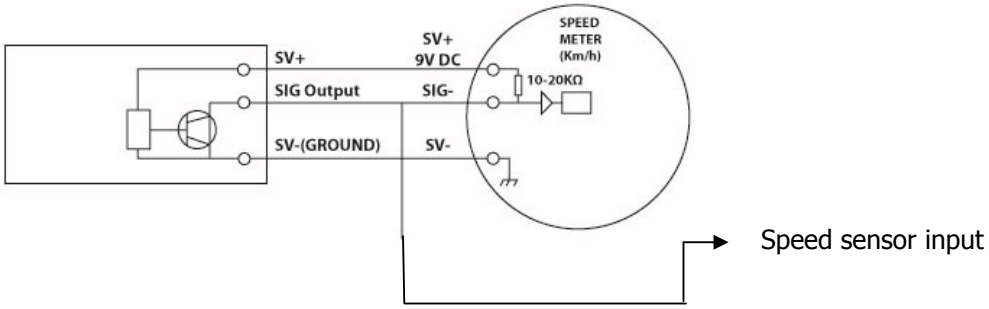
Speed sensor input wire on DVR:

Label	Color	Description
SENSOR	Purple	Speed sensor input

2. Connect 1:

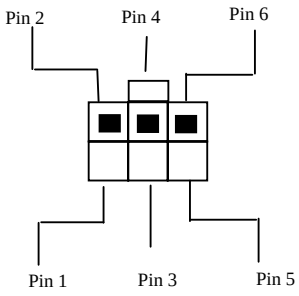


3. Connect 2:



5. Appendix: Cables

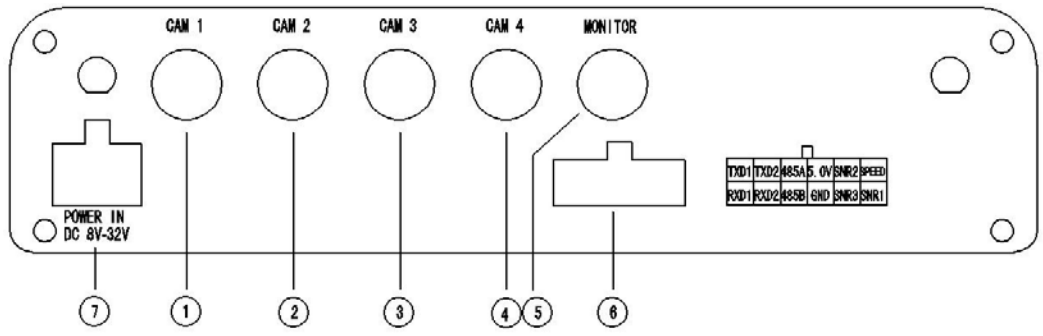
5.1 Power supply



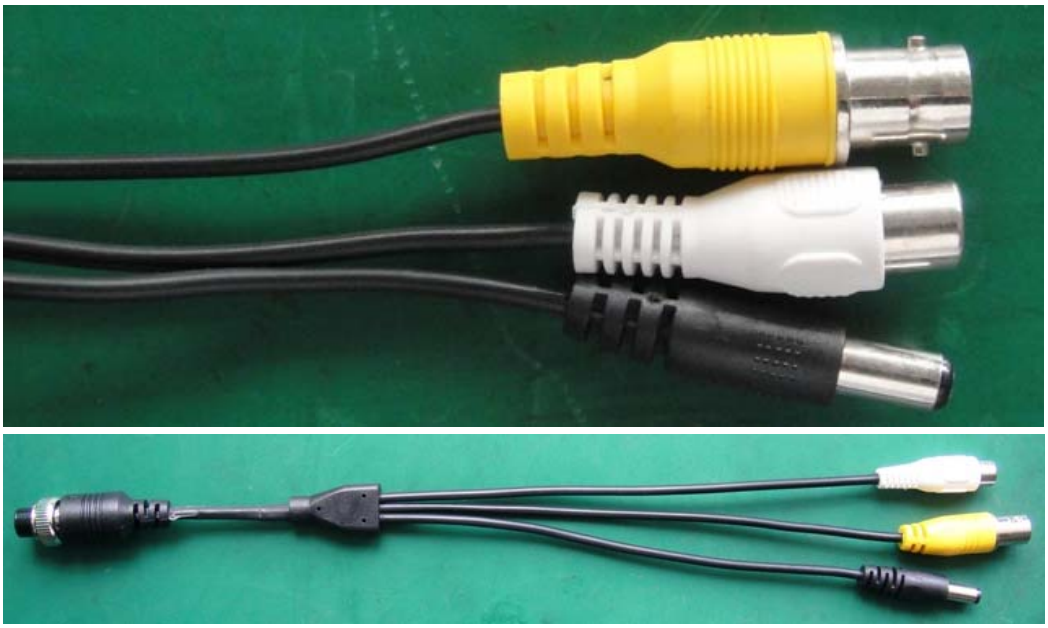
Pin	Color	Description
2	**RED**	**(+)** of power supply
4	**YELLOW**	Ignition signal. Connect this wire to **(+)** of power supply if you don't use ignition to control the power.
6	**BLACK**	**(-)** of power supply

5.2 AV cables

Audio and video connection interface (in the DVR back panel)



1） AV input cables

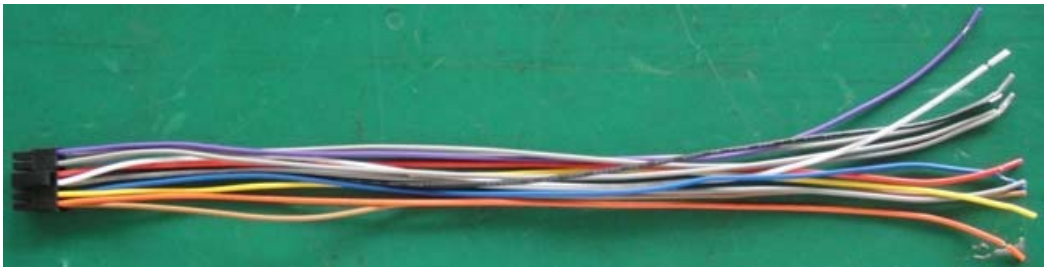


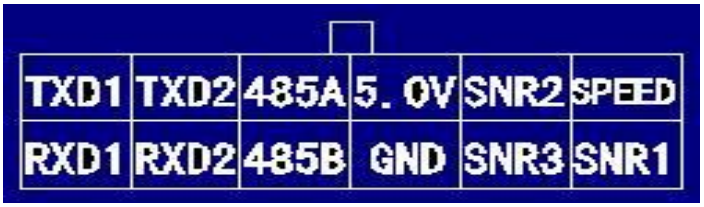
Mark	Description
Yellow (VIN)	Video input
White (AIN)	Audio input
Black (12V)	Power output for camera (+12 VDC, Maximum current 1A)

2） AV output cable

Mark	Description
Yellow (VO)	Video out
White (AO)	Audio out
Black (12V)	Power output for camera (+12 VDC, Maximum current 0.5A)

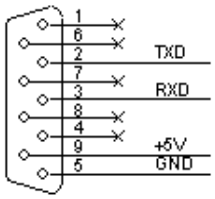
5.3 Signal cables





Mark	Description	Color	Description
1	TXD1	Orange	TXD, COM1, (GPS)
2	RXD1	Brown	RXD, COM1, (GPS)
3	TXD2	Yellow	TXD, COM2
4	RXD2	Blue	RXD, COM2
5	485A	White	RS485 A, (PTZ)
6	485B	Grey	RX485 B, (PTZ)
7	5.0V	Red	+5 VDC
8	GND	Black	Ground
9	SNR2	Grey	Sensor 2
10	SNR3	Grey	Sensor 3
11	SPEED	Purple	Speed sensor
12	SNR1	Grey	Sensor 1

- GPS connector (RS232 COM1)



PIN	Description
2	TXD: Data Transmit
3	RXD: Data receive
5	GND: Ground
9	+5V DC: Power output

6. Specifications

SPECIFICATIONS		
	ITEM	**DVRM-5004**
VIDEO	**VIDEO INPUT**	4 channels
	VIDEO OUTPUT	1 channel, 1.0V, p-p, 75Ω, BNC
	VIDEO FORMAT	Support PAL / NTSC
	VIDEO COMPRESSION	H.264 High Profile
	RECORD RESOLUTION	1280x1024 (PAL) / 1248x832 (NTSC)
	FRAME RATE	100fps (PAL) / 120fps (NTSC)
	VIDEO BITRATE	1.98Mbps ~ 4.5Mbps, 4 level video quality
AUDIO	**AUDIO INPUT**	4 channels
	AUDIO INPUT FORMAT	20KΩ, RCA
	AUDIO OUTPUT	1 channel, 500Ω, RCA
	AUDIO LEVEL	1V ~2V, p-p
	AUDIO COMPRESSION	G.711
STORAGE	**STORAGE**	Hard Drive, SD card, external USB device (memory stick or Hard Drive)
	FILE FORMAT	AVI
INTERFACE	**SENSORS**	1 speed sensor, 1 ignition sensor, 3 sensors for brake, return etc.
	COM PORT	2 RS232 port, 1 RS485 port
	NETWORK	RJ45, 10M/100M Ethernet
	GPS	Support GPS receiver (included), can record GPS information along with video and audio. GPS data format: NEMA0183, Baudrate: 4800bps
SOFTWARE	**PLAYER**	Specially designed player for the DVR

	THIRD PARTY SOFTWARE	Windows Media Player (Ver. 11.0 or above), VLC Media Player (Ver1.0.0 or above)
POWER	**INPUT POWER**	From +8VDC to +40VDC
	POWER OUTPUT	DC, +12V@1.5A, +5V@1A
	POWER COMSUMPTION	Working power: <5W, Strand by power: 0.1W (exclude camera, Hard Drive, monitor)
OTHER	**WORKING TEMPRETURE**	From -10℃ ~ +60℃
	SIZE	180mm x 180mm x 42mm
	WEIGHT	1.8kgs

7. List of Standard Accessories

Item	Description	Quantity
1	Mobile Digital Video Recorder with Anti-vibration mounting (cradle)	1 pc
2	Anti-vibration mounting (cradle)	1 pc
3	AV Input Cable	4 pcs
3	AV Output Cable	1 pc
4	Integration cable	1 pc
5	Remote controller	1 pc
7	Fuse box	1 pc
8	2 Amp fuse	2 pcs
9	Screw for Hard Drive installation	4 pcs
10	Hard Drive Case (w/o Hard Drive)	1 pc
11	Power cable	1 pc
12	GPS Receiver	1 pc
13	External USB Hard Drive Reader	1 pc